

of the Committee ought to acquiesce in its decisions. We ourselves do not agree with every point of the Committee's work, but at the same time the "List" supplied a great want in ornithology in this country, and it will, no doubt, be greatly improved in a second edition.

Oologists in this country have in Mr. Seebohm's work a thoroughly good hand-book, the figures of the eggs being highly satisfactory, while as to the information concerning the nesting-habits and life of the birds, we believe this "History of British Birds" to be by far the most complete yet published in this country. R. B. S.

### NOTES

THE collection of funds for the Pasteur Hospital is proceeding rapidly. The total of the first list is a little under 10,000*l*.

IN reply to a recent letter from the Russian Minister of Education, M. Pasteur has written offering to receive Russian doctors for instruction, and suggesting that Russia should contribute towards the establishment of his proposed Institution at Paris. A small establishment for the application of M. Pasteur's method against rabies has already been started in St. Petersburg, on the initiative and at the expense of Prince Alexander of Oldenburg, where experiments on rabbits and dogs are now being made, preparatory to the treating of persons in danger of hydrophobia.

IN the House of Commons, last week, in reply to a question by Sir Henry Roscoe, Mr. Chamberlain stated that his attention had been called to the reported discovery by M. Pasteur of a cure for hydrophobia. The recognised eminence of M. Pasteur as a scientific investigator, and the great interest and importance which attach to the subject of his recent inquiries, seemed to him to justify a careful and impartial examination of the results obtained. At present the information on the matter in the possession of his department was too vague and incomplete to afford materials for a full appreciation of M. Pasteur's process. Mr. Chamberlain promised to consider how such an inquiry can be most satisfactorily conducted, and to confer with the Chancellor of the Exchequer with reference to the question of the expense. He hoped to be able to arrange for such an investigation as may enable a just estimate to be formed as to the reliability of M. Pasteur's method and its applicability to this country.

THE French Minister of Public Instruction has applied to the French Parliament for a grant of about 150,000*fr*. for the building of an equatorial-coude according to the Lœwy system. The total sum required will be 100,000*fr*. more.

AT the last meeting of the Berlin Anthropological Society Prof. Virchow stated that the German Colonial Society had sent circulars to all European colonies situated in the tropics, requesting observations to be made regarding the question of the acclimatisation of Europeans in the tropics, the result of this inquiry to be communicated to the German Naturalists' Association at their next annual meeting in September. An exhibition of objects required in fitting out scientific travellers for their journeys will also be held at the same time as the meeting of German naturalists.

THE Ben Nevis Weather Reports chronicle an extraordinary dryness of the air in the end of last week. From 3 a.m. of Thursday the air became so dry that a humidity of about 15 per cent. was maintained for some time, and the dew-point fell to  $-24^{\circ}\text{O}$ . On Friday the humidity was about 13 per cent. till 3 p.m., when the air became still drier, and at 9 p.m. the humidity was only 8 per cent., the readings at this hour being: dry bulb,  $19^{\circ}\cdot 2$ , and wet bulb,  $13^{\circ}\text{O}$ . The great dryness ceased

at midnight, when the air suddenly became saturated. The snow lying at the Observatory at present is not much more than half the quantity of the two previous winters at this season.

It is reported that on Sunday night, about 11 o'clock, a sharp shock of earthquake, lasting seven seconds, caused a panic at the theatre in Granada. The audience rose, and rushed into the streets. The inhabitants, awakened by the shock, poured out of their houses, and many persons remained in the streets and squares part of the night. Very little material damage was done to the houses, and none to the public buildings, for the preservation of which the authorities have adopted precautions. The shocks were oscillatory from west to east, and accompanied by a rumbling noise. The shock was felt also in the districts which were the scene of the earthquake of 1884. The villagers were terribly alarmed, and some houses were injured.

A VIOLENT shock of earthquake was felt at Wiesbaden at twenty-eight minutes past midnight on Sunday.

THE fourth volume of Dr. M. C. Cooke's "Illustrations of British Fungi" is just completed, bringing the total number of coloured plates up to 622, illustrating 790 species and varieties of *Agaricus*, or more than double the number figured by Fries in his "Icones," and nearly as many as there are in the combined works of Sowerby, Hussey, Bolton, Bulliard, and Krombholz. It is estimated that the two volumes yet to be published, if the author receives sufficient support, will contain about 400 additional species, making a total of nearly 1200 species and varieties of the gill-bearing *Fungi*, or nearly three times as many as in any other work in existence. The four volumes accomplished represent five years' laborious work and a great expenditure of money by the author, who is publishing at his own sole cost; yet we are assured that he has not only derived no profit therefrom, but has suffered a loss, and this in spite of his having saved the expense of an artist. Surely there must be a sufficient number of persons in this country interested in botany to render such a work self-supporting, if not remunerative; especially as the price is about half that of contemporaneous Continental works on the same subject. Dr. Cooke, in response to numerous solicitations, also proposes issuing a volume of coloured plates of British Desmids as a supplement to his "British Fresh-Water Algæ," provided a sufficient number of subscribers come forward.

NEAR the village of Dorndorf (Prussian province of Nassau) considerable alarm has recently been caused by the repeated appearance of extensive fissures in the surface of a hill. Quite lately the main fissure has advanced to within 100 metres of the village, at which point it, however, turned aside, seemingly returning to its starting-point. Subsidence of the soil has also been noticed in several parts of the circumscribed area, which measures about a mile in diameter.

THE climate of Lucerne has been described by Herr Suidter (in a recent address there) on the basis of five years' observations at Mariahilf. Lucerne, he says, is in the föhn-climate, but on the outer edge of its zone (the föhn being, it is known, a strong, warm, descending wind of southerly direction in Switzerland). The former is proved by the preponderance of warm winds and the large rainfall (average 1275·8 mm. in 1879-83) compared with Central Switzerland, the latter by the low mean annual temperature ( $8^{\circ}\cdot 284\text{ C.}$ ), and by a much less rainfall than places near the source of the föhn, such as (in descending order) Riggikult, Vitznau, Schwyz, and Engelberg; where the föhn blows much oftener and more continuously and strongly. A peculiar green tinge of the sky's blue over the Uri or Obwaldner Mountains tells the Lucerners of the föhn's coming, some 12 to 24 hours in advance. Drenching rain nearly always comes with it. The lowest temperature in those five years was  $-17^{\circ}\text{ C.}$  (in 1879); but years often pass without

the thermometer going down to  $-10^{\circ}$  or  $-15^{\circ}$ . In the cold winter of 1879 the arm of the lake never became unnavigable from ice, and the robust exotic plants in the open gardens were scarcely damaged at all. The vegetation of Lucerne is much more southerly than the mean annual temperature of  $8^{\circ}284$  would lead one to expect. It is an interesting fact that as early as 1598 there was in Lucerne a small botanic garden (formed by Renward Cysat), where many exotic plants, such as tobacco, were grown, and from which issued the best methods for cultivating fruit-trees, &c.

THE curious phenomenon of "lake-balls" is to be met with on the Sils Lake and others in the Upper Engadine. They are composed of larch-leaves felted together. Three samples (the largest over a foot in diameter) were recently exhibited by Herr Coaz at the Berne Naturalists' Society, and he stated that these balls are formed in small bays into which the prevailing south-west winds blow. The water acquires a whirling motion, and the larch-leaves involved in it, together with pieces of moss, &c., are worked into balls. There is no cementing with mud. Sometimes, on shallow banks—not in bays—sausage-like forms are met with. Prof. Fischer made reference to another kind of lake-balls formed of a filamentous alga in the lakes of Sweden and other countries; also to the marine balls, formed of fragments of phanerogamic sea-plants (*Zostera*, *Cymodocea*, &c.) which were at one time used medicinally.

AT the last meeting of the Seismological Society of Tokio, Prof. Milne read a paper describing the results obtained from a seismic survey of the ground in the neighbourhood of his house. By the seismic survey of a district he meant an examination of the different parts of that district with regard to the effects which were produced upon them by earthquakes. After describing local peculiarities of the ground, he said that he placed at different places, but in similar positions, similarly constructed seismographs. These had been proved to give diagrams which were practically absolute measures of the movements of the ground, and, when any of these instruments were placed side by side, they gave similar results. The result of observing many earthquakes was that all the instruments, the positions of which would be included in a triangle the sides of which were 800 or 900 feet in length, gave different indications as to direction, amplitude, maximum velocity, and intensity. So that, had these instruments been in the hands of different observers, each observer would have given a different account of the same earthquake. Thus, comparing the average maximum velocities at a station, C, on hard ground, with that at a station, E, on soft ground, they were found to be 1 : 5. The maximum accelerations at these two stations were 1 : 2.4. It might therefore be concluded that a building at C would withstand a disturbance which would be sufficient to shatter a similar building placed at E. Prof. Milne also described further experiments made with a seismograph placed in a pit 10 feet deep, and with a wooden building the foundations of which at first rested on 10-inch cannon-balls, and subsequently on cast-iron shot 6 mm. in diameter.

ALL these experiments were made with a view to discover the best method of constructing buildings which would stand earthquake shocks with least damage. The practical conclusion of the investigation was that there were three ways by which residents could escape from very much of the motion which disturbs an ordinary building. These were (1) by a seismic survey they might select a site where there was relatively little motion; (2) they might build up from the bottom of a pit, which might be utilised as a cellar, the walls of the houses not touching the sides of the pit; (3) when obliged to build on soft ground, when a pit could not be excavated, a light one-storied

building of wood or iron might be rested on a layer of cast-iron shot.

WE have received from Dr. D. J. Macgowan, whose name has for many years been well known to all students of China, a copy of a curious paper by him on the movement cure in China, contributed to the *Medical Reports* of the Chinese Customs. In form the paper (which contains several interesting illustrations of the *modus operandi* of the cure) is a notice of successive writers on the system of therapeutics, which was actually practised on the late Empress by a high official who was supposed to be an adept in the art. The notion that supernatural power was imparted to the human frame, and that the latter was rendered invulnerable to disease and death, by breath-swallowing, or accumulations of air in the system, is a very old one. About the sixth century before our era a celebrated writer recommended a mild form of exercise to effect this, and this exercise, with breath-gulping, now constitutes the Chinese movement cure. After tracing the fluctuations of the practice and their causes, Dr. Macgowan comes to a work published in 1858 by the high official already mentioned. Life, it is taught, depends on the existence of a primary aura; so long as a particle of it is retained in the system, death cannot occur. A deficient supply is the cause of disease; and when it duly permeates the system, every ailment is averted. The object of the postures, motions, and frictions is to promote the due circulation of that vital air. One writer illustrates the state of the system that is thoroughly saturated with air by that of a drunken man who falls from a cart without sustaining injury, because of intoxication; so a man permeated with the vital aura is invulnerable. Disease appears only when the vitiated air can find entrance, when the circulation of the vital air is defective. The air starts in its circulatory movement from the "little heart," which is situated in the pubic region; air-vessels convey it thence upward anteriorly to the forehead, where these vessels become continuous with a similar system that returns the air posteriorly to the "little heart." Without fire this aura is the source of animal heat; without water it lubricates the viscera. Fate, indeed, determines longevity as it does birth, yet disease may be averted by employing the movement cure, which is preferable to delaying until disease sets in, when the art is comparatively useless. These are the principles on which the cure rests.

THESE curious searchings into the mysteries of life and death are followed by a description of the details of the process. These are too numerous and complicated to be mentioned at length. They deal with the periods of air-swallowing and friction, the time for inhaling the sun's air and the moon's air, the time and modes of friction, the implements for shampooing (amongst them being a bag filled with water-worn pebbles, and a pestle or round bat for pounding the abdomen), and the various muscular movements, many of which are exceedingly comical. In gulping air the east should be faced, and twelve of the various operations described should be gone through each forty-nine times. In going through the exercises there is to be no thinking, for the mind must be absolutely quiescent. Reference to this air-swallowing is made in the earliest extant Chinese medical treatises, but regular practitioners have always regarded the exercises as charlatanism.

MR. HOWARD GRUBB, F.R.S., will give the first of two lectures on the Astronomical Telescope on Saturday (March 27), at the Royal Institution; and on Friday (April 2) he will give a discourse on Telescopic Objectives and Mirrors: their Preparation and Testing.

M. GASTON TISSANDIER has issued the prospectus of a large work which he is preparing on the great aeronauts. The work

will be in two volumes, the first of which is to appear next October.

THE additions to the Zoological Society's Gardens during the past week include a Silky Marmoset (*Midas rosalia*) from Brazil, presented by Mr. Percy Bewick Bewick; a Green Monkey (*Cercopithecus callitrichus* ♂) from West Africa, presented by Mrs. Dunn; a White-crowned Mangabey (*Cercocebus ethiops*) from West Africa, presented by Mr. N. King; a Grey Ichneumon (*Herpestes griseus*) from India, presented by Mr. W. A. Roof; a Black-backed Jackal (*Canis mesomelas* ♀) from South Africa, presented by Mrs. E. Thomas; a Grey Ichneumon (*Herpestes griseus* ♀) from India, a Demoiselle Crane (*Grus virgo*) from North Africa, presented by Mr. T. W. Proger; a Moor Monkey (*Semnopithecus maurus* ♀) from Java, deposited; a Talapoin Monkey (*Cercopithecus talapoin* ♀) from West Africa, received in exchange.

### OUR ASTRONOMICAL COLUMN

**DARK TRANSITS OF JUPITER'S FOURTH SATELLITE.**—Prof. Davidson, of the U.S. Coast Survey, has communicated to the Californian Academy of Sciences some interesting notes of observations of "dark" transits of Jupiter's satellite IV. made by Mr. Burckhalter with a 10½-inch reflector. Mr. Burckhalter's observations on May 21, 1885, suggest the possibility that the satellite has an area of white surface and also an area of dark surface. When the satellite approached the planet it appeared bright, the white area being then the visible part; but when it had advanced some way on the disk, this white part was (on this supposition) lost in the superior brightness of the planet, and the dark area became visible. Prof. Davidson thinks it might even lead to the determination of the rotation period of the satellite if it were watched throughout the whole transit, and the different phases noted. Again, observing on June 7, 1885, Mr. Burckhalter saw the satellite as a dark spot on the edge of the north dark belt. But as soon as the satellite was clear of the planet's disk, it was noted to be north of this belt; so that it would appear from this observation also as if the satellite were divided into bright and dark areas, the south pole being the dark one. Prof. Davidson also observed the transit of June 7 with a 6¼-inch refractor, and confirms generally the appearances noted by Mr. Burckhalter.

**NOVA ANDROMEDÆ OF 1885, AND NOVA SCORPII OF 1860.**—With reference to Prof. Seeliger's researches on the subject of the Nova in Andromeda (NATURE, vol. xxxiii. p. 397), Herr Auwers draws attention in the *Astronomische Nachrichten*, No. 2715, to the great similarity of this outburst to the phenomenon observed by him in 1860 in the nebula 80 Messier in Scorpio. He considers that the probability that, in an interval of twenty-five years, two variable stars of so exceptional a character should be projected on the central part, in one case of a close star-cluster, in the other case of an object which appears to be, in part at least, a close star-cluster, is so small that the identity of the circumstances attending the phenomena of 1860 and 1885 makes it almost necessary to refer both outbursts to physical changes in the nebulae in which they respectively appeared. As Prof. Seeliger makes no mention of this (in Herr Auwers' opinion) very strong argument in favour of his supposition respecting the cause of the outburst in Andromeda, Herr Auwers is induced to do so, and takes the opportunity of publishing the details of his observations of the Nova of 1860, an account of the discovery of which was printed in the *Astronomische Nachrichten*, No. 1267. Herr Auwers states that having turned the Königsberg heliometer on 80 Messier on the evening of May 21, 1860, he saw a 7th magnitude star in the nebula, a little following the central part, which it quite outshone in brilliancy. By June 16 this star had degraded to magnitude 10.5. It will be remembered that the "new" star in Scorpio was independently discovered in this country by Mr. Pogson, whose attention was arrested on May 28, 1860, "by the startling appearance of a star of the 7.6 magnitude in the place which the nebula had previously occupied." On June 10, according to this observer, the stellar appearance had nearly vanished, but the cluster still shone with unusual brilliancy and a marked central condensation.

**FABRY'S COMET.**—The following ephemeris, by Dr. H.

Oppenheim (*Astr. Nach.* No. 2711) is in continuation of that given in NATURE for 1886 March 4:—

1886	R.A.			Decl.		Log <i>r</i>	Log $\Delta$	Bright- ness
	h.	m.	s.	°	'			
March 23	23	16	58	36	5'6 N.	9.8421	0.0589	20
27	23	16	57	37	12.4	9.8233	0.0203	26
31	23	17	59	38	11.5	9.8102	9.9744	34
April 4	23	20	55	38	58.9	9.8043	9.9198	45
8	23	27	4	39	28.7	9.8062	9.8547	61
12	23	38	33	39	31.4 N.	9.8157	9.7767	83

The brightness on December 2 is taken as unity.

**BARNARD'S COMET.**—The following ephemeris, by Dr. A. Krueger (*Astr. Nach.* No. 2710), is in continuation of that given in NATURE for 1886 March 4:—

1886	R.A.			Decl.		Log <i>r</i>	Log $\Delta$	Bright- ness
	h.	m.	s.	°	'			
March 22	1	51	49	27	34.3 N.	0.0217	0.2230	7.12
26	1	51	13	28	57.0	9.9917	0.2144	8.51
30	1	50	34	30	23.2 N.	9.9594	0.2036	10.38

The brightness on December 5 is taken as unity.

### ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 MARCH 21-27

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

#### At Greenwich on March 21

Sun rises, 6h. 1m.; souths, 12h. 7m. 15.4s.; sets, 18h. 13m.; decl. on meridian, 0° 19' N.; Sidereal Time at Sunset, 6h. 10m.

Moon (one day after Full) rises, 18h. 50m.\*; souths, oh. 53m.; sets, 6h. 45m.; decl. on meridian, 2° 35' S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian
Mercury ...	6 19	13 12	20 5	9 40 N.
Venus ...	4 23	9 43	15 3	8 37 S.
Mars ...	15 54	22 55	5 56*	11 11 N.
Jupiter...	18 4*	0 13	6 22	0 59 N.
Saturn ...	9 59	18 11	2 23*	22 48 N.

\* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

#### Occultations of Stars by the Moon (visible at Greenwich)

March	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image
23 ...	$\gamma$ Libræ	...	4½ ...	23 19 ...	23 58 ... 93 167
24 ...	$\eta$ Libræ	...	6 ...	4 18 ...	5 34 ... 75 285

March	h.	
21 ...	19	Jupiter in opposition to the Sun.
22 ...	2	Mercury at greatest elongation from the Sun, 19° east.
25 ...	—	Venus at greatest morning brilliancy.

#### Variable Stars

Star	R.A. h. m.	Decl. °		h. m.
U Cephei ...	0 52.2	81 16 N.	Mar. 23,	19 35 <i>m</i>
Algol ...	3 0.8	40 31 N.	"	21, 1 7 <i>m</i>
			"	23, 21 56 <i>m</i>
R Aurigæ ...	5 8.1	53 27 N.	"	22, <i>m</i>
$\zeta$ Geminorum ...	6 57.4	20 44 N.	"	25, 4 50 <i>M</i>
U Monocerotis ...	7 25.4	9 32 S.	"	21, <i>M</i>
$\delta$ Libræ ...	14 54.9	8 4 S.	"	25, 21 18 <i>m</i>
T Libræ ...	15 4.2	19 35 S.	"	24, <i>M</i>
U Coronæ ...	15 13.6	32 4 N.	"	23, 2 29 <i>m</i>
U Ophiuchi...	17 10.8	1 20 N.	"	24, 4 40 <i>m</i>
		and at intervals of 20 8		
X Sagittarii...	17 40.4	27 47 S.	Mar. 24,	0 0 <i>m</i>
			"	26, 21 30 <i>M</i>
W Sagittarii	17 57.8	29 35 S.	"	22, 2 20 <i>M</i>
T Herculis ...	18 4.8	31 0 N.	"	24, <i>M</i>
$\beta$ Lyræ ...	18 45.9	33 14 N.	"	22, 2 20 <i>M</i>
R Cygni ...	19 33.8	49 57 N.	"	22, <i>M</i>
$\eta$ Aquilæ ...	19 46.7	0 7 N.	"	25, 0 0 <i>M</i>
$\delta$ Cephei ...	22 24.9	57 50 N.	"	22, 19 10 <i>m</i>

*M* signifies maximum; *m* minimum.